IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of:	)	Docket No.: 32340-DIV
CHARD, Joshua T., et al.	)	Group Art Unit No.: 3634
Serial No.: 10/664,622	)	Examiner: CHIN SHUE, Alvin C.
Filed: September 17, 2003	)	Confirmation No.: 4008
Title:	)	
ISOLATION MECHANISM FOR ELECTRICALLY ISOLATING CONTROLS OF A BOOMED APPARATUS	)	

APPEAL BRIEF

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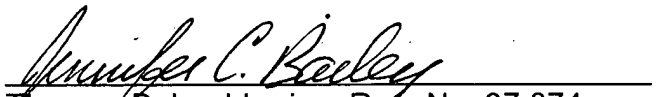
APPELLANT'S BRIEF ON APPEAL

In response to the Office Action dated October 20, 2005, and the Notice of Appeal filed January 13, 2006, Appellant's Brief on Appeal in accordance with 37 C.F.R. § 41.37 is hereby submitted. The Examiner's rejections of claims 1, 17, 22, and 23–33 as last amended are herein appealed, and allowance of said claims is respectfully requested.

The requisite fee of $500.00 as required by 37 C.F.R. § 41.20 accompanies this Brief. Any additional fee which is due in connection with this application should be applied against Deposit Account No. 19-0522.

Respectfully submitted,

By 

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Following are the requisite statements under 37 C.F.R. § 41.37:

I. Real Party in Interest

Joshua T. Chard and Edman R. Blair are the inventors of the claimed invention. Joshua T. Chard and Edman R. Blair have assigned all of their rights, title, and interest in the invention, application, and any Letters Patent issuing therefrom to ALTEC INDUSTRIES, INC., a corporation duly organized under the laws of the State of Alabama. Therefore, ALTEC INDUSTRIES, INC. is the real party in interest.

II. Related Appeals and Interferences

The present application is a divisional application claiming priority to U.S. Application No. 10/103,433 (the '433 application). A final Office Action dated July 14, 2005 was received in the '433 application, a Notice of Appeal was filed on November 14, 2005, and an Appeal Brief was filed on January 12, 2006. Therefore, the appeal of the '433 application is related to the present application and appeal.

III. Status of Claims

This application was filed with 13 claims, of which claims 1, 3, 5, 7, 10, and 12 were independent. A preliminary amendment was filed with the application cancelling claims 3, 4, 7–9, 12, and 13. In an amendment dated April 29, 2004, claims 5, 6, 10, and 11 were withdrawn and new claims 14–21 were added. In an amendment dated April 7, 2005, claims 5, 6, 10, 11, 20, and 21 were cancelled. In an amendment dated July 29, 2005, all pending claims except for claims 1, 17, and 22 were cancelled, and new claims 23–33 were added. Therefore, claims 1, 17, and 22–33 are currently pending with claims 1, 17, 22, and 23 being independent. The rejection of claims 1, 17, and 22 is herein appealed.

IV. Status of Amendments

All amendments submitted by the Appellant have been entered.

V. Summary of Claimed Subject Matter

The invention of claim 1 is directed to an isolation mechanism for a boomed apparatus, wherein the boomed apparatus includes a movable boom 16 and a control assembly 20 comprising substantially electrically conductive control valves 40 located at a general distal end 24 of the boom 16. Application, page 6, line 22 – page 7, line 30.

The isolation mechanism comprises a substantially electrically non-conductive control handle 48 actuatable by a worker to provide a control input. Application, page 7, line 31 – page 8, line 14. The isolation mechanism further comprises a linkage 50 configured for positioning proximate to the distal end 24 of the boom 16 and substantially external to the boom 16, the linkage 50 operable to couple the control handle 48 with the control assembly 20 so as to communicate the control input therebetween. *Id.* The linkage 50 further includes an elongated rod assembly that is substantially electrically non-conductive, such that when positioned external to the boom 16, the linkage 50 provides a dielectric gap between the control handle 48 and the movable boom 16 to substantially electrically isolate the control handle 48 from the control assembly 20 and the movable boom 16 to thereby prevent bodily injury to the worker. *Id.*, page 8, lines 14–32. The linkage thus isolates the control handle 48 from the conductive portions of the boom above the insulating section of the boom.

The invention of independent claim 17 is directed to an isolation mechanism for a boomed apparatus 12, wherein the boomed apparatus 12 includes a movable boom 16 having a periphery and a control assembly 20 comprising a substantially electrically conductive control valve assembly 20 carried by the boom 16 at a general distal end 24 of the boom 16. *Id.*, page 6, line 22 – page 7, line 30.

The isolation mechanism comprises a substantially electrically non-conductive control handle 48 having a length, and a substantially electrically non-conductive linkage 50 coupled with the control handle 48. Application, page 7, line 31 – page 8, line 19. The linkage 50 is configured for coupling with the control valve assembly whereupon the linkage 50 extends beyond a periphery of the boom, wherein a length of the linkage 50 is approximately greater than the length of the control handle 48. *Id.*, FIGs. 2,3,5.

Independent claim 22 presents means-plus-function elements. The invention of independent claim 22 is directed to an isolation mechanism configured for coupling with a boomed apparatus 12 comprising a movable boom 16 and a control assembly 20. The

isolation mechanism comprises means 48 for providing control input to the boom 16 when the isolation mechanism is coupled with the boom 16. Application, page 8, lines 14–19; FIGs. 2–3. The isolation mechanism further comprises means 48,50 for producing a dielectric gap between the means for providing control input to the boom 16 and the movable boom 16 when the isolation mechanism is coupled with the boom 16. Application, page 8, lines 20–32; FIGs. 2–4.

VI. Grounds of Rejection to be Reviewed on Appeal

1. Claim 22 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Prescott (U.S. Patent No. 3,489,243), Balogh (U.S. Patent No. 3,844,378), or Gilmore (U.S. Patent No. 3,985,041).
2. Claims 1, 17, 24, and 33 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Gilmore or Prescott in view of either Luscombe (U.S. Patent No. 4,784,278) or Bauer (U.S. Patent No. 3,842,458).
3. Claims 17 and 24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Balogh in view of either Luscombe or Bauer.

VII. Argument

A. Summary of U.S. Patent No. 3,489,243 to Prescott

Prescott discloses an electrically non-conductive boom operable to electrically isolate a manual control used by a worker so as to prevent hazardous phase-to-earth current flow. (Abstract). Although Prescott does protect against electrocution from phase-to-earth current flow, Prescott does not address nor protect a worker from electrocution due to phase-to-phase current flow, i.e., electrocution due to current flow through energized or grounded metal components at the distal end of the boom, such as handle 72. Importantly, if the worker touches the energized handle 72 and then touches an energized or grounded control with a different potential, the worker is not protected from electrocution due to current flow through the boom tip or distal end of the boom.

As best illustrated in Figs. 6 and 7, Prescott discloses control handles 72 that are positioned immediately external to the boom section 16a. Electrically non-conductive rod-like members 36,38 are positioned within the boom, and actuators 34 couple the rod-like

members 36,38 with member 74 including bell cranks 76, pin 78, and fingered bar 80. (Col. 2, l. 4 and ll. 39-46; Fig. 6).

Although Prescott specifically teaches when an element is non-conductive, Prescott does not teach or suggest that the member 74, the bell cranks 76, the pin 78, the fingered bar 80, and the handles 72 are made of an electrically non-conductive material or are otherwise electrically non-conductive. Therefore, it cannot be assumed that Prescott teaches or suggests electrically non-conductive linkage sufficient to provide a dielectric gap between a control handle and a boom.

Prescott also specifically teaches away from locating electrically conductive control valves proximate to the distal end of the boom. In particular, Prescott teaches locating the hydraulic, electric, or pneumatic controls 24 comprising valve spools 28, 30, and 32 in a generally middle section of the boomed apparatus, as illustrated in Figs. 2 and 8. Importantly, Prescott notes that "[t]he elimination of hydraulic, electric and pneumatic means between bucket 18 and control 24 as mechanism for remote actuation of the latter resolves the problem of electrical danger than is normally inherent in such other systems." Prescott, Col. 2, lines 57-60. Therefore, Prescott specifically teaches away from locating control valves proximate to the distal end of the boom and near the work station due to the concern that an electric discharge may flow through the conductive control valves.

B. Summary of U.S. Patent No. 3,844,378 to Balogh

Balogh discloses a control system for a boom and bucket that replaces hydraulic fluid lines between the bucket and a base of the boom with electrical and optic communication means to, among other things, provide electrical insulation between the bucket and the ground. *See, e.g.*, Balogh, col. 1, lines 61–62; col. 2, lines 10–12, 27–30.

A controller 40 is electrically connected to a lamp assembly 56 such that manipulation of a lever on the controller 40 generates optic signals in the lamp assembly 56, which are carried via optic fibers 68 to an optic receiver assembly 70 located near a base of the boom. *Id.*, col. 4, lines 3–57. The optic receiver assembly 70 converts the optic signals to electrical signals, and communicates the electrical signals to a valve assembly 80, which drives hydraulic cylinders 28,36. Id., col. 4, line 58 – col. 5, line 9; col. 5, lines 32 – col. 6, line 1.

Importantly, Balogh expressly teaches that the optic fibers "contribute to the electrical insulation of the basket from the ground," and does not teach providing a dielectric gap between a control input and the boom. *Id.*, col. 2, lines 9–11 (emphasis added). In fact, Balogh expressly teaches a conductive path between the controller 40 and the boom because, for example, such is necessary to communicate electrical signals between the controller 40 and the lamp assembly 56.

Furthermore, Balogh teaches placing the hydraulic control valve at the base of the boom, and strongly teaches away from placing the valve at a distal end of the boom by listing an array of disadvantages associated with such a design. Balogh, col. 1, lines 41–57.

C. Summary of U.S. Patent No. 3,985,041 to Gilmore

Gilmore discloses a control system for a boom and bucket that provides a measure of electrical isolation to a worker in the bucket. A portion 5 of the boom is made from non-conducting material 5a. A push-pull cable system communicates user control inputs from mechanical levers 23 to a valve system 17 located below a base of the boom. Metal push-pull cables connect the levers 23 to the boom, and are connected to non-conducting cables 24 that extend along the length of the non-conducting material 5a. The non-conducting push-pull cables 24 connect to an electric controller 21, which communicates an electric control signal to the valve system 17 via cables 19.

Importantly, mechanical levers 23 are not electrically isolated from the boom. In fact, Gilmore expressly teaches a conductive path between the mechanical levers 23 and the boom via the metal push-pull cables 50. Furthermore, Gilmore expressly teaches that the hydraulic control valves are located beneath a base of the boom and, therefore, not on the boom at all.

It should be noted that each of the prior art references cited by the Examiner that relate to electrically isolating a bucket locate a hydraulic valve external to the boom, at a base of the boom, or at a mid-section of the boom. The present invention, in contrast, does not require the hydraulic valve to be so located but provides a dielectric gap between a control input and the boom so that the valve may be placed at the distal end of the boom without posing an electrical shock hazzard to a user manipulating the controls. Additional

information regarding the Prescott, Balogh and Gilmore references is provided below where appropriate. A discussion of the other cited references is also provided below where appropriate.

D. Summary of Arguments

Appellant respectfully submits that the Examiner's rejections should not be sustained because:

1. the Examiner has failed to cite a single prior art reference that teaches, either expressly or inherently, each and every element as set forth in claim 22;

2. the Examiner has failed to cite a reference or combination of references that teaches or suggests each limitation of claim 1; and

3. the Examiner has failed to cite a reference or combination of references that teaches or suggests each limitation of claim 17.

E. The Examiner has failed, with regard to the rejection of independent claim 22 under 35 U.S.C. § 102(b) as being anticipated by Prescott, Balogh, or Gilmore, to establish that either Prescott, Balogh, or Gilmore anticipates the claimed invention.

None of the prior art references of record disclose, either expressly or inherently, a "means for producing a dielectric gap between the means for providing control input to the boom and the moveable boom when the isolation mechanism is coupled with the boom," as recited in claim 22.

Appellants note that a "claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628 (Fed. Cir. 1987); MPEP § 2131. Furthermore, the "identical invention must be shown in as complete detail as is contained in the . . . claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226 (Fed. Cir. 1989); MPEP § 2131. It should be noted that the dielectric gap recited in claim 22 is located between the means for providing the control input to the boom and the movable boom.

Prescott

In support of the rejection of claim 22, the Examiner argues simply that "Prescott shows a handle 72, linkage 36,38 and a control assembly 24" and that "Balogh shows electrically non-conductive linkage 68." *See, e.g.*, Office Action dated October 20, 2005, page 3. Notably, the Examiner failed to specifically identify what he regards as the dielectric gap recited in claim 22. Nonetheless, it is clear from the disclosure of Prescott that there is no such dielectric gap. Referring to FIG. 7, Prescott discloses that section 16a of the boom 16, the U-shaped carrier 52, and the rod-like members 36,38 are made of non-conducting material. However, none of these elements provide a dielectric gap between a "means for providing control input to the boom and the moveable boom," as recited in claim 22.

The mechanism 74, which connects handles 72 with the rods 36,38, includes bell cranks 76 and is connected to a fingered bar 80 via pin 78. *See* Prescott, FIG. 6. The fingered bar 80 is secured to bracket 82, which extends into the boom and is attached to carrier 52. *Id.*, col. 2, lines 36–49. Prescott affirmatively recites that the rods 36,38, the boom section 16a, and the carrier 52 are non-conductive, but does not teach that the handles 72, the mechanism 74, the bell cranks 76, the fingered bar 80, or the pin 78 are non-conductive. It cannot simply be assumed that such elements are non-conductive. Therefore, those elements provide a conductive path between the handles 72 and the boom 16 (element 82 extends well into the boom 16), and there is no dielectric gap between a "means for providing control input" and a "moveable boom" as recited in claim 22. Moreover, because Prescott does not teach or suggest the existence of a dielectric gap, such also cannot be assumed.

Based on the Examiner's scant argument (recited above) in support of his rejection, Appellants assume that the Examiner argues that the rods 36,38 provide the dielectric gap recited in claim 22. It is Appellants' position that the rod-like members 36,38 disclosed in Prescott are not sufficiently external to the boom to produce a dielectric gap, and especially not one capable of protecting a worker from hazardous electrical current above an insulated boom section. As illustrated in FIG. 7, the rods 36,38 are not external to the boom whatsoever; it is the actuator 34, the mechanism 74, the bell cranks 76, the pin 78, the fingered bar 80, and the handles 72 that are external to the boom, non of which are

non-conductive, as explained above. Because the rods 36,38 are not external to the boom, they cannot create the dielectric gap recited in claim 22.

Balogh

The Examiner also argued that "Balogh shows electrically non-conductive linkage 68." *See, e.g.*, Office Action dated October 20, 2005, page 3. Appellants note that claim 22 does not recite a linkage, but a "means for producing a dielectric gap between the means for providing control input to the boom and the movable boom when the isolation mechanism is coupled with the boom."

Because the Examiner did not identify any specific elements of Balogh as forming a dielectric gap, Appellants assume the Examiner argues that the optic fibers designated by the reference numeral 68 in Balogh are equivalent to the claimed means for producing a dielectric gap. It should be noted that while the Examiner refers to element 68 as a "linkage," it is actually a group of optic fibers operable to communicate light from the chambers 64 located in lamp assembly 56 (located on an upper beam 26 of the boom) to a receiver assembly 70 located near a base of the boom. Balogh, col. 4, lines 24–58. The optic fibers 68 are not equivalent to the claimed means for producing a dielectric gap because the claimed means produces a dielectric gap between the means for providing control input to the boom and the movable boom. The optic fibers 68, in contrast, do not extend between a control input and a boom, but rather extend from a first portion of the boom (at lamp assembly 56 above an insulated section of the boom) to a second portion of the boom (at receiver assembly 70 below an insulated section of the boom). Therefore, even if the optic fibers 68 are made of a dielectric material, they clearly do not provide a dielectric gap between a means for providing a control input and a moveable boom.

In fact, Balogh expressly teaches an electrically conductive path between a means for providing a control input to the boom (the controller 40 on the bucket) and the boom: an electric circuit between the lever 42 and the lamp assembly 56 that provides for the communication of electricity between the controller 40 and light bulbs in the lamp assembly 56 in response to movement of the lever 42. (Balogh, col. 3, line 45–col. 4, line 18; col. 5, lines 10–12). Thus, the electrically-conductive path between the lever 42 and the boom is not only taught by Balogh, it is necessary to practice the invention disclosed in Balogh.

Gilmore

The Examiner listed Gilmore as one of the references that allegedly anticipate the invention of claim 22, but failed to provide any arguments in support of this conclusion. Appellants assume the Examiner argues that either the metal push-pull cable 50 or the non-conducting cables 24 are equivalent to the claimed means for providing a dielectric gap.

While the metal push-pull cable 50 is connected at a first end to mechanical levers 23 on the bucket 7 and is connected at a second end to a boom member 5, it cannot provide a dielectric gap between the levers 23 and the boom member 5 because Gilmore expressly recites that the push-pull cable 50 is metal. *See, e.g.*, Gilmore, col. 4, lines 54–55. Therefore, the push-pull cable 50 clearly provides a conductive path between the levers 23 and the boom member 5.

While the cables 24 are constructed of a non-conductive material (*Id.*, col. 3, lines 12–16), they do not provide a dielectric gap between "the means for providing control input to the boom and the movable boom," as recited in claim 22, because the cables 24 clearly do not extend between the boom and a means for providing control input. As illustrated in FIG. 1, the cables 24 extend from a first portion of the boom (near the termination of metal push-pull cable 50) to a second portion of the boom (at bracket 48). Therefore, the cables 24 are clearly not equivalent to the means for providing a dielectric gap recited in claim 22.

In sum, neither Prescott, Balogh, nor Gilmore expressly or inherently discloses a means for producing a dielectric gap between the means for providing control input to the boom and the movable boom, as recited in claim 22. Therefore, the Examiner's rejection of claim 22 under 35 U.S.C. § 102(b) as being anticipated by Prescott, Balogh, or Gilmore cannot be sustained.

F. Legal Discussion of Obviousness

Obviousness can be a problematic basis for rejection because the Examiner, in deciding that a feature is obvious, has the benefit of the Applicant's disclosure as a blueprint and guide. In contrast, one with ordinary skill in the art would have no such guide, in which light even an exceedingly complex solution may seem easy or obvious.

Furthermore, once an obviousness rejection has been made, the Applicant is in the exceedingly difficult position of having to prove a negative proposition (i.e., non-obviousness) in order to overcome the rejection. For these reasons, MPEP § 2142 places upon the Examiner the initial burden of establishing a *prima facie* case, which requires, among other things, that there be identified some motivation or suggestion in the prior art or in the knowledge of one with ordinary skill to modify the reference or to combine reference teachings. If the Examiner fails to establish the requisite *prima facie* case, the rejection is improper and will be overturned. *See In re Rijckaert,* 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). Only if the Examiner's burden is met does the burden shift to the Applicant to provide evidence to refute the rejection.

More specifically, three criteria must be satisfied in order to establish a *prima facie* case of obviousness: (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine their teachings; (2) there must be a reasonable expectation of success; and (3) the prior art reference (or combination of references) must teach or suggest all the claim limitations. *See* MPEP §706.02(j), citing *In re Vaeck*, 20 USPQ2d 1438 (Fed. Cir. 1991). Furthermore, "[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." *In re Fritch,* 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992) (reversing an obviousness rejection where there was no suggestion to modify a prior art mower strip to make it entirely flexible as required by applicant's claims toward a flexible landscape edging strip); *see also In re Gordon*, 221 USPQ2d 1125, 1127 (Fed. Cir. 1984). Additionally, "if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification." MPEP § 2143.01. Further yet, if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

In meeting this initial burden, the Examiner "cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed

invention." *In re Fine*, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988). There are three possible sources for a proper motivation to combine references: "the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art." MPEP § 2143.01 (citing *In re Rouffet*, 149 F.3d 1350 (Fed. Cir. 1998)). Thus, "[m]easuring a claimed invention against the standard established by section 103 requires the oft-difficult but critical step of casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field." *See e.g., W. L. Gore & Assoc., Inc. v. Garlock, Inc.*, 220 USPQ 303, 313 (Fed. Cir. 1983).

G. The Examiner has failed, with regard to the rejection of claim 1 under 35 U.S.C. § 103(a) over Gilmore or Prescott in view of Luscombe or Bauer, to establish the requisite *prima facie* case of obviousness because the Examiner has failed to site a reference or combination of references that teach or suggest each limitation of claim 1.

None of the prior art references cited by the Examiner teach or suggest a "linkage configured for positioning proximate the distal end of the boom and substantially external to the boom, the linkage operable to couple the control handle with the control assembly so as to communicate the control input therebetween, the linkage further including an elongated rod assembly that is substantially electrically non-conductive, such that when positioned external to the boom, the linkage provides a dielectric gap between the control handle and the movable boom . . ."

The Examiner argues that "Gilmore and Prescott all show the claimed mechanism with the exception of the non-conductive handle." Office Action, October 20, 2005, page 3. Appellant respectfully disagrees.

Prescott

As explained above in subsection F, Prescott does not teach an element that "provides a dielectric gap between the control handle and the moveable boom," as recited in claim 1. Rather, the invention disclosed in Prescott includes handles and various linking elements between the handles and the boom that provide a conductive path between the handles and the boom via the conductive portions of the boom above the insulating section of the boom.

Furthermore, the linkage recited in claim 1 is substantially external to the boom and includes an elongated rod assembly that is substantially electrically non-conductive. Thus, claim 1 requires that the linkage include an elongated rod assembly that is both substantially non-conductive and substantially external to the boom. The only non-conductive rods disclosed in Prescott, however, are the rods 36,38, which are *completely* internal to the boom. *See* FIGs. 2 and 3. Therefore, the rods 36,38 are not equivalent to the linkage recited in claim 1.

Further yet, the linkage recited in claim 1 couples the control handle with the control assembly, wherein the control assembly includes control valves located at a general distal end of the boom. While the control valves are recited in the preamble of claim 1, the preamble must act as a limitation to claim 1 because it gives meaning to the claim and defines the invention. The Federal Circuit has made it clear that language in the preamble of a claim is a claim limitation in certain circumstances, such as where the preamble language is necessary to give meaning to the claim. *See, e.g., Apple Computer, Inc. v. Articulate Systems, Inc.*, 234 F.3d 14, 22, 57 USPQ2d 1057, 1063 (Fed. Cir. 2000) ("Language in a claim preamble . . . acts as a claim limitation only when such language serves to 'give meaning to a claim and properly define the invention,' not when the preamble merely states a purpose or intended use of the invention. *In re Paulsen*, 30 F.3d 1475, 1479, 31 USPQ2d 1671, 1673 (Fed. Cir. 1994) (*quoting DeGeorge v. Bernier*, 768 F.2d 1318, 1322 n. 3, 226 USPQ 758, 764 n. 3 (Fed. Cir. 1985))."); *Marston v. J.C. Penney Co.*, 353 f.2d 976, 986, 148 USPQ 25, 33 (4th Cir. 1965, cert. denied, 385 U.S. 974 (1966) (stating that a preamble will be considered a limitation if "the claim cannot be read independently of the preamble and the preamble must be read to give meaning to the claim or is essential to point out the invention").

Appellants note that "the control assembly" is recited in one of the elements of claim 1, wherein the control assembly is previously set forth only in the preamble. Therefore, the preamble must be used to give meaning to the claim and, therefore, must act as a limitation.

Appellants assume the Examiner argues that rods 36,38 correspond to the linkage recited in claim 1. Appellants point out that the rods 36,38 do not link a control handle with a control assembly, as recited in claim 1. Prescott, for example, does not disclose a control assembly with control valves located at a general distal end of the boom. Rather, Prescott discloses a control 24 that is located at a jointed mid-section 16b of the boom. Prescott, FIGs. 1,2; col. 1, lines 64–70. In fact, Prescott expressly recites the importance of not locating control valves on a distal end of the boom at column 2, lines 57–61:

> The elimination of hydraulic, electric and pneumatic means between bucket 18 and control 24 [at the mid-section of the boom] as mechanism for remote actuation of the latter resolves the problem of electrical danger that is normally inherent in such other types of systems.

Because Prescott does not teach or suggest a control assembly as recited in claim 1, no elements of the invention of Prescott can reasonably be understood to couple a control handle with such a control assembly.

Gilmore

As explained above in subsection F, Gilmore does not teach a dielectric gap between a control handle and a movable boom, much less between a control handle and the conductive portions of the boom above an insulating section of the boom. The metal push-pull cable 50, for example, provides a conductive path between the boom and the mechanical levers 23.

Claim 1 recites a linkage operable to couple a control handle with a control assembly, wherein the linkage is "configured for positioning proximate a distal end of the boom and substantially external to the boom" and includes an "elongated rod assembly that is substantially non-conductive." Gilmore does not teach such a linkage. Rather, Gilmore teaches a "standard metallic type push-pull cable 50" connecting mechanical levers 23 with cables 24. The push-pull cable neither includes an elongated rod assembly, nor is it substantially non-conductive. Thus, Gilmore clearly fails to teach or suggest the

linkage as recited in claim 1, and the Examiner's rejection of claim 1 under 35 U.S.C. § 103(a) cannot be sustained.

Because both Gilmore and Prescott fail to teach or suggest a linkage as recited in claim 1, the Examiner has failed to establish the requisite *prima facie* case of obviousness and the rejection of claim 1 under 35 U.S.C. § 103(a) cannot be sustained.

H. The Examiner has failed, with regard to the rejection of claim 17 under 35 U.S.C. § 103(a) over Gilmore or Prescott in view of Luscombe or Bauer and Balogh in view of Luscombe or Bauer, to establish the requisite *prima facie* case of obviousness because the Examiner has failed to site a reference or combination of references that teaches or suggests each limitation of claim 17.

None of the prior art references cited by the Examiner, considered singly or in combination, teach or suggest "a substantially electrically non-conductive linkage coupled with the control handle and configured for coupling with the control valve assembly whereupon the linkage extends beyond a periphery of the boom, wherein a length of the linkage is approximately greater than the length of the control handle."

The Examiner argues that "Gilmore and Prescott all show the claimed mechanism with the exception of the non-conductive handle." Office Action, October 20, 2005, page 3. Appellant respectfully disagrees.

Prescott

The linkage recited in claim 17 is "coupled with the control handle" and "configured for coupling with the control valve assembly whereupon the linkage extends beyond a periphery of the boom . . .," wherein the control valve assembly is "carried by the boom at a general distal end of the boom . . ."

No element disclosed in Prescott includes the same features as the linkage recited in claim 17. The Examiner concludes that the rods 36,38 are linkages (Office Action, October 20, 2005, page 3), but provides no argument in support of this conclusion. As explained above, the rods 36,38 are entirely internal to the boom disclosed in Prescott, and therefore do no "extend beyond a periphery of the boom" as recited in claim 17.

Furthermore, the rods 36,38 do not couple a control handle with a control valve assembly that is "carried by the boom at a general distal end of the boom," as recited in claim 17. The hydraulic system disclosed in the Prescott patent includes hydraulic valve spools 28,30,32 located in a control 24, that is placed within a jointed mid-section of the boom 14, not at "general distal end of the boom."

It would not have been obvious to modify the system of Prescott to place the control 24 on the distal end of the boom because, for example, the uppermost section 16a of the boom 16 is made from a non-conducting material which would serve no purpose if a conductive hydraulic line passed therethrough. As noted at column 1, lines 16–21, "[d]ielectric materials are employed in the hollow boom which carries the bucket in a manner to insulate the workman from the controls so that electrical shock . . . cannot result from manipulation of such mechanism from the bucket while working on or near electrical installations." Moving the control 24, which includes valve spools, to the distal end of the boom (where the bucket is located), would utterly defeat the purpose of having a non-conductive boom section because it would introduce a conductive path through the non-conductive section.

Gilmore

As explained above, the linkage recited in claim 17 is "coupled with the control handle" and "configured for coupling with the control valve assembly whereupon the linkage extends beyond a periphery of the boom . . ." Furthermore, the control valve assembly is "carried by the boom at a general distal end of the boom . . ."

Gilmore does not teach or suggest linkage as recited in claim 17. The valve system (17) disclosed in Gilmore is located below a platform (2) which "provides the support structure for movable boom elements." Gilmore, FIG. 1; col. 2, lines 3–4. Thus, the valve system of Gilmore is <u>not located on the boom</u> at all, much less "carried by the boom at a general distal end of the boom."

The only element of the electrohydraulic system of Gilmore that connects to the mechanical levers 23 on the bucket 7 is a flexible metal push-pull cable 50. Gilmore, FIG. 1. In addition to not coupling a control handle with a control valve assembly "carried by the boom at a general distal end of the boom," the push-pull cable is not even a "linkage." The

dictionary defines "linkage" as a "system of links or bars which are jointed together and more or less constrained by having a link or links fixed and by means of which straight or approximately straight lines or other point paths may be traced." WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 1317 (1993). This dictionary definition is consonant with the usage of the term in the application. The push-pull cable disclosed in Gilmore, in contrast, does not include a "system of links or bars," but rather includes a "wire portion which is able to move within an outer tubular portion." Gilmore, col. 1, lines 10–11.

Furthermore, the non-conductive cables 24, which are interposed between the metal push-pull cables 50 and an electrical controller 21, each includes an innermost actuating core 25 and a multilayer sheath 26. Gilmore, col. 3, lines 17–35; FIG. 1. The core 25 and the sheath 26 are made of plastic, flexible material. *Id.*

Placement of the valve of the invention of claim 17 at a "general distal end of the boom" is significant because the prior art methods of insulating boom buckets requires placing the valve at a distance from the bucket to protect against phase to ground discharge through the insulating section of the boom. Gilmore teaches away from placing the control valve at the distal end of the boom (near the bucket), for example, because Gilmore protects the worker in the bucket 7 from electrical shock by "having a section of the second boom member 5 made entirely of electrically non-conductive material 5a." Gilmore, col. 2, lines 24–27; FIG. 1. Relocating the valve system 17 taught by Gilmore would not only require re-engineering the system of Gilmore to replace the push-pull cables, but it would utterly defeat the innovative aspect of Gilmore, which is the non-conductive cables (24) and the non-conductive material 5a of the boom, by introducing a conductive hydraulic path through those non-conductive elements.

Balogh

The optic fibers 68 taught by Balogh simply transmit light between the lamp assembly 56 and the receiver assembly 70, and therefore do not meet the dictionary meaning of "linkage," which is defined as a "system of links or bars which are jointed together and more or less constrained by having a link or links fixed and by means of which straight or approximately straight lines or other point paths may be traced." WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 1317 (1993); *see also* http://www.dictionary.com

(defining linkage as a "system of interconnected machine elements, such as rods, springs, and pivots, used to transmit power or motion."). Thus, the small, flexible optic fibers 68 (Balogh, col. 4, lines 45–50) clearly are not linkages.

Because the prior art references cited by the Examiner, considered singly or in combination, do not teach or suggest all the limitations of claim 17, the Examiner's rejection of claim 17 under 35 U.S.C. § 103(a) is improper and cannot be sustained.

J. Conclusion

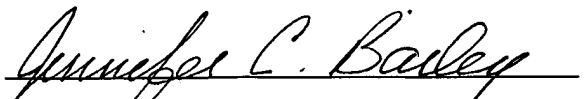
Regarding the rejection of claim 22 under 35 U.S.C. § 102(b), the Examiner has failed to cite a single prior art reference that discloses a *means for producing a dielectric gap between the means for providing control input to the boom and the movable boom when the isolation mechanism is coupled with the boom.*

Regarding the rejection of claim 1 under 35 U.S.C. § 103(a), the Examiner has failed to cite a reference or combination of references that teach or suggest a *linkage configured for positioning proximate to the distal end of the boom and substantially external to the boom, the linkage operable to couple the control handle with the control assembly so as to communicate the control input therebetween, the linkage further including an elongated rod assembly that is substantially electrically non-conductive, such that when positioned external to the boom, the linkage provides a dielectric gap between the control handle and the movable boom to substantially electrically isolate the control handle from the control assembly and the movable boom to thereby prevent bodily injury to the worker.*

Regarding the rejection of claim 17 under 35 U.S.C. § 103(a), the Examiner has failed to cite a reference or combination of references that teach or suggest a *substantially electrically non-conductive linkage coupled with the control handle and configured for coupling with the control valve assembly whereupon the linkage extends beyond a periphery of the boom*, wherein the control valve assembly is *carried by the boom at a general distal end of the boom.*

Accordingly, reversal of the Examiner's rejections is proper, and such favorable action is solicited.

Respectfully submitted,

By 

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VIII. Claims Appendix

1. An isolation mechanism for a boomed apparatus, wherein the boomed apparatus includes a movable boom and a control assembly comprising substantially electrically conductive control valves located at a general distal end of the boom, the isolation mechanism comprising:

a substantially electrically non-conductive control handle actuatable by a worker to provide a control input; and

a linkage configured for positioning proximate to the distal end of the boom and substantially external to the boom, the linkage operable to couple the control handle with the control assembly so as to communicate the control input therebetween, the linkage further including an elongated rod assembly that is substantially electrically non-conductive, such that when positioned external to the boom, the linkage provides a dielectric gap between the control handle and the movable boom to substantially electrically isolate the control handle from the control assembly and the movable boom to thereby prevent bodily injury to the worker.

2–16. (Cancelled)

17. An isolation mechanism for a boomed apparatus, wherein the boomed apparatus includes a movable boom having a periphery and a control assembly comprising a substantially electrically conductive control valve assembly carried by the boom at a general distal end of the boom, the isolation mechanism comprising:

a substantially electrically non-conductive control handle having a length; and

a substantially electrically non-conductive linkage coupled with the control handle and configured for coupling with the control valve assembly whereupon the linkage extends beyond a periphery of the boom, wherein a length of the linkage is approximately greater than the length of the control handle.

18–21. (Cancelled)

22. An isolation mechanism configured for coupling with a boomed apparatus comprising a movable boom and a control assembly, the isolation mechanism comprising:

means for providing control input to the boom when the isolation mechanism is coupled with the boom; and

means for producing a dielectric gap between the means for providing control input to the boom and the movable boom when the isolation mechanism is coupled with the boom.

23. An isolation mechanism for a boomed apparatus, wherein the boomed apparatus includes a movable boom having a periphery and a control assembly comprising a substantially electrically conductive control valve assembly carried by the boom at a general distal end of the boom, the isolation mechanism comprising:

a substantially electrically non-conductive control handle having a length;

an actuating assembly configured for coupling with the control valve assembly, such that a portion of the actuating assembly extends beyond the periphery of the boom when coupled with the valve assembly; and

a substantially electrically non-conductive linkage having a length, a first connection end coupled with the actuating assembly, and a second connection end coupled with the control handle, wherein a combined length of the portion of the actuating assembly extending beyond the periphery of the boom and the length of the linkage is approximately greater than the length of the control handle.

24. The isolation mechanism as set forth in claim 17, the linkage further comprising at least one elongated link constructed of an electrically nonconductive material.

25. The isolation mechanism as set forth in claim 24, wherein vertical movement of the control handle induces vertical movement of the elongated link.

26. The isolation mechanism as set forth in claim 25, whereupon vertical movement of the elongated link, the actuating mechanism is engaged to operably instruct the control valve assembly.

27. The isolation mechanism as set forth in claim 17, the linkage further comprising an elongated pivoting frame constructed of an electrically nonconductive material.

28. The isolation mechanism as set forth in claim 27, wherein horizontal movement of the control handle induces rotation of the pivoting frame.

29. The isolation mechanism as set forth in claim 28, whereupon rotation of the pivoting frame, the actuating mechanism is engaged to operably instruct the control valve assembly.

30. The isolation mechanism as set forth in claim 23, the linkage further comprising at least one elongated link constructed of an electrically nonconductive material.

31. The isolation mechanism as set forth in claim 23, the linkage further comprising a pivoting frame constructed of an electrically nonconductive material.

32. The isolation mechanism as set forth in claim 1, wherein the rod assembly comprises at least one elongated link.

33. The isolation mechanism as set forth in claim 32, wherein the rod assembly further comprises an elongated pivoting frame.

IX. Evidence appendix

None.

X. Related proceedings appendix

None.

3-14-06

AP/ IFW $

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of:	Docket No.: 32340-DIV
CHARD, Joshua T., et al	Confirmation No.: 4008
Serial No.: 10/644,622	Group Art Unit No.: 3634
Filed: 09/17/2003	
ISOLATION MECHANISM FOR ELECTRICALLY ISOLATING CONTROLS OF BOOMED APPARATUS	Examiner: Chin Shue, Alvin C.

TRANSMITTAL

Transmitted herewith are: Transmittal (1 page); Transmittal of Appeal Brief (Large Entity) (1 page); Appeal Brief (24 pages); $500.00 Filing Fee; and return postcard.

EV 760671838 US
Express Mail No.

Respectfully submitted,

HOVEY WILLIAMS LLP

Dated: March 13, 2006 by Jennifer C. Bailey

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TRANSMITTAL OF APPEAL BRIEF (Large Entity)

Docket No. 32340-DIV

In Re Application Of: **CHARD, Joshua T., et al.**

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
10/664,622	September 17, 2003	CHIN SHUE, Alvin C.	23589	3634	4008

Invention: **ISOLATION MECHANISM FOR ELECTRICALLY ISOLATING CONTROLS OF BOOMED APPARATUS**

COMMISSIONER FOR PATENTS:

Transmitted herewith is the Appeal Brief in this application, with respect to the Notice of Appeal filed on:

The fee for filing this Appeal Brief is: **$500.00**

☒ A check in the amount of the fee is enclosed.

☐ The Director has already been authorized to charge fees in this application to a Deposit Account.

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Jennifer C. Bailey
Signature

Dated: **March 13, 2006**

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